



# TRAFFIC AND SAFETY MANUAL

## Chapter 3 – Pavement Markings 3A – General

# Purpose of Pavement Markings

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## Functions and Limitations

Pavement markings on highways have important functions in providing guidance and information for the road user. In some cases pavement markings are used to supplement other traffic control devices such as signs, signals and other markings. In other instances, pavement markings are used alone to effectively convey regulations, guidance, or warnings in ways not obtainable by the use of other devices.

Pavement markings have limitations. Visibility of the markings can be limited by snow, debris, and water on or adjacent to the markings. Marking durability is affected by material characteristics, pavement characteristics, traffic volumes, weather, location, etc. However, under most highway conditions, pavement markings provide important information while allowing minimal diversion of attention from the roadway.

## Standardization of Application

Each standard marking shall be used only to convey the meaning prescribed for it in the Manual on Uniform Traffic Control Devices (MUTCD). Before any new highway, surfaced detour, or temporary route is opened to traffic, all necessary markings should be in place.

Markings no longer applicable, which may create confusion in the mind of the motorist shall be removed or obliterated as soon as practicable. Other markings required by road condition or restriction should be removed or obliterated when those conditions cease to exist or the restrictions are withdrawn. All markings on Interstate highways and all Iowa Primary highways shall be retroreflective.

## Material

Most pavement markings are waterborne paint. Waterborne paint, however, does not cure properly under 40 F. When the pavement surface is colder than 40 F, Volatile Organic Content (VOC) compliant solvent borne paint should be used. In areas of heavy traffic, more durable markings are available such as epoxy, tape, and other experimental products.

## General Principles - Longitudinal Pavement Markings

Longitudinal pavement markings shall conform to the following basic concepts:

1. Yellow lines delineate the separation of traffic flows in opposing directions or mark the left edge of the pavement of divided highways, ramps and one-way roads. Yellow lines also delineate the separation of two-way left turn lanes and reversible lanes from other lanes.

2. White lines delineate the separation of traffic flows in the same direction or mark the right edge of the pavement.
3. Red markings delineate roadways that shall not be entered or used by the viewer of those markings.
4. Blue markings delineate parking spaces for persons with disabilities.
5. Broken lines indicate a permissive condition.
6. Dotted lines provide guidance.
7. Solid lines prohibit or discourage crossing.
8. A normal line is 4 to 6 in. wide.
9. A wide line is at least twice the width of a normal line.
10. The width of the line indicates the degree of emphasis.
11. Double lines indicate maximum or special restrictions.
12. Markings that must be visible at night shall be reflectorized unless ambient illumination assures adequate visibility. All markings on Interstate highways and all Iowa Primary highways shall be retroreflective.

## **Types of Longitudinal Lines**

The following examples illustrate the use of longitudinal lines:

1. A normal broken white line is used to delineate the edge of a travel path where travel is permitted in the same direction on both sides of the line. Its most frequent application is as a lane line of a multi-lane roadway.
2. A normal broken yellow line is used to delineate the left edge of a travel path where travel on the other side of the line is in the opposite direction. A frequent application is as a centerline of a two-lane, two-way roadway where overtaking and passing is permitted.
3. A normal solid white line is used to delineate the edge of a travel path where travel in the same direction is permitted on both sides of the line but crossing the line is discouraged. It is frequently used to separate left and right turn bays from through traffic. This type of line is also used to mark the right edge of the through roadway.
4. A wide solid white line is used for emphasis where the crossing requires unusual care.
5. A double solid white line is used to delineate a travel path where travel in the same direction is permitted on both sides of the line, but crossing the line is prohibited.
6. A double line consisting of a normal, broken yellow line and a normal, solid yellow line delineates a separation between travel paths in opposite directions where overtaking and passing is permitted with care for traffic adjacent to the broken line and is prohibited for traffic adjacent to the solid line. This is a one direction, no-passing marking. It is used on two-way, two- and three-lane roadways to regulate passing. It is also used to delineate the edges of a lane in which travel in either direction is permitted (but only as part of a left-turn maneuver). In the latter application, the markings are to be placed with the solid lines on the outside and the dashed lines to the inside of the lane. Traffic adjacent to the solid line may cross this marking with care only as part of a left-turn maneuver.
7. A double line consisting of two normal solid yellow lines delineates the separation between travel paths in opposite directions where overtaking and passing is prohibited in both directions. This is a two-direction, no-passing marking. Crossing this marking with care is permitted only as part of a left-turn maneuver.

8. A double, normal, broken yellow line delineates the edge of a lane in which the direction of travel is changed from time to time in such a way that the line serves as the centerline of the roadway during some period. Its use is for a reversible lane.
9. A normal dotted line is used to delineate the extension of a line through an intersection or interchange area. It shall be the same color and at least the same width as the line it extends.
10. A solid yellow line delineates the left edge of a travel path to indicate a restriction against passing on the left or delineates the left edge of each roadway of divided streets or highways, one-way roadways, and ramps in the direction of travel.

## **Transverse Pavement Markings**

Transverse markings, which include shoulder markings, word and symbol markings, stop lines, crosswalk lines, speed measurement markings, parking space markings and others shall be white except that:

Markings visible only to traffic proceeding in the wrong direction on a one-way roadway may be red.

The International Symbol of Accessibility Parking Space marking may be white with a blue background and white border.

Because of the low approach angle at which pavement markings are viewed, it is necessary that transverse lines be proportioned to give visibility equal to that of longitudinal lines. Pavement marking letters, numerals, and symbols shall be in accordance with the “Standard Alphabets for Highway Signs and Pavement Markings”.

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